"JUST LIFE IN A NUTSHELL": HUMOURS AS COMMON SENSE

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I

As evolved creatures, we fit quite well into our environment. We have senses to perceive it, muscles and nerves to act upon it. We do not need to go to university to learn how to walk, talk, run, and distinguish hot from cold, day from night, liquid from solid, dark from bright. Yet we have evolved in such a way that we are capable of wondering how we can jump and run, what it is that makes water cold or hot, how we see, feel, hear, and hurt. If we call common sense the cognitive faculty we are born with, then one part of that common sense is the very faculty to ask basic questions such as those. And given how sophisticated can be our commonsensical questions and answers, ordinary, everyday, "folk" knowledge is worthy of some—expert—study.

Clifford Geertz, in his influential "Common Sense as a Cultural System," called common sense "a relatively organized body of considered thought, rather than just what anyone clothed and in his right mind knows."[1] The process of posing and answering our own questions consists in the creation of many a "body of considered thought"—of explanatory systems, each constructed according to sets of rules internal to it. One can invoke divinities as the causes of storms and sunlight, or build rituals around natural occurrences, or one can invent a systematic method of enquiry according to which answers are deemed dependable when empirically verifiable and revisable. The former systems are those that anthropologists have long taken seriously and studied, as human phenomena that, once uncovered and looked at from a distance, help us understand our social and biological nature, our societies, and our cognitive makeup. The latter system is the one that yields

[1] Clifford Geertz, "Common Sense as a Cultural System," *Local Knowledge* (New York: Basic Books, 1983 and London: HarperCollins, 1993) 73–93, at 75.

modern scientific knowledge, and to study how it works is to engage in epistemology; it is to delimitate what we can know about the world.

This clear-cut distinction between two realms of expert enquiry—the one concerning our social and cognitive selves and the other, the physical world outside ourselves—is a modern one. Because it is largely acceptable now that we are evolved, embodied creatures embedded in nature and naturally social, that separation is less fashionable today than it was when the modern mode of scientific investigation came into its own, from the early 17th century on. But the notion seems to endure that matters of epistemology should not participate of anthropology,[2] and it remains a given of serious scholarship that what can be categorized as unfounded or unexamined belief or, worse, superstition—such as astrology or divinatory practices—is not worthy of hard-core epistemological examination.

There is a historical reason for this assumption. Modern science was founded on the basis of a skepticism about the value of common sense for explaining the world—a laudable, fertile skepticism about our cognitive capacities and what is immediately given to them, about the received views and explanatory systems passed on within cultures.[3] Of course, from antiquity on, expertise had always developed apart from popular belief—books had been read by the few and written by the even fewer. But we are the direct heirs of the specific notion born in early modernity and consolidated in the Enlightenment that dependable and useful accounts of the universe, from stars to the body, depended on data derived from one's adhering to a strictly defined method of investigation that involved the use of evidence and testimony.[4] Whatever thereafter continued to be shared by "folk"

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[2] Within the domain of philosophy, this notion can be traced back to Kant's program of transcendental metaphysics: In the *Critique of Pure Reason*, he distinguished the act of "simply observing, and in the manner of anthropology seeking to institute a physiological investigation into the motive causes of [his] actions" from the "rule and order altogether different from the order of nature," where "actions have taken place, not because they were determined by empirical causes, but because they were determined by grounds of reason" (*Critique of Pure Reason*, trans. Norman Kemp-Smith [Basingstoke: Palgrave Macmillan 2003] 474–75). Moreover, he claims that "*empirical psychology* [. . .] belongs where the proper (empirical) doctrine of nature belongs, namely, by the side of *applied* philosophy, the *a priori* principles of which are contained in pure philosophy; it is therefore so far connected with applied philosophy, though not to be confounded with it. Empirical psychology is thus completely banished from the domain of metaphysics (ibid: 664).

[3] For studies on the role of skepticism in early modern natural philosophy in England, see for example, Henry G. Van Leeuwen, *The Problem of Certainty in English Thought, 1630–1690* (The Hague: M. Nijhoff, 1963); Robert M. Burns, *The Great Debate on Miracles: From Joseph Glanvill to David Hume* (London: Burns, 1981). A key source is Joseph Glanvill's *The Vanity of Dogmatizing* (London, 1661). From 1674, Glanvill would be active in publicly articulating the mission of the Royal Society; see also Joseph Glanvill, "Of Scepticism and Certainty," *Essays on Several Important Subjects in Philosophy and Religion* (London, 1676).

[4] Peter Dear, *Discipline and Experience: The Mathematical Way in the Scientific Revolution* (Chicago and London: U of Chicago P, 1995); Simon Schaffer and Steven Shapin, *Leviathan and the Air*

knowledge and scientific enquiry has disappeared under the supposed reign of reason and a growing mass of specialized expertise. Anthropologists such as Geertz tried to redefine and repristinate common sense, suggesting that it is as amenable to epistemological analysis as the higher, expert cultural genres from the arts and law to maths and the sciences and that it might be something more than "what is left over when all these more articulated sorts of symbol systems have exhausted their tasks, what remains of reason when its more sophisticated achievements are all set aside."[5] Many anthropologists listened. Historians of science, especially Steven Shapin, continued the work.[6] But it is not finished. Philosophers too could engage with the material anthropologists put before us—hence the need to establish "folk epistemologies."

Historians of science have long known that the mechanistic science we know grew on old ground, that in early and even somewhat recent modernity, it was enmeshed with a host of notions that, to the commonsensical, ordinary reader of, say, the *New York Times* science pages, might now seem like bizarre credences, magical beliefs, and superstitions that partake of other cultural systems and other sorts of Geertzian common sense.[7] And the idea just outlined, that the establishment of "proper," modern scientific knowledge progressively spelled the end of the authoritativeness of common sense, is very much a historicist way of accounting for the difference between what one currently considers folk and high knowledge. A starting point for addressing the program that Geertz set up is thus to consider history, rather than tribes, and to wonder how solid is this historicist account. In what terms can we ask, with Geertz, whether or not common sense rests its case "on the assertion that it is not a case at all, just life in a nutshell"?[8]

II

To reformulate these questions and attempt a few answers to them, we may take as a test-case ourselves: our knowledge of the body and specifically, the case of the

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Pump: Hobbes, Boyle and the Experimental Life (Princeton, NJ: Princeton UP, 1985); Steven Shapin, *A Social History of Truth* (Chicago and London: U of Chicago P, 1994).

[5] Geertz (1983/1993): 92.

[6] See Steven Shapin's "Proverbial Economies: How an Understanding of Some Linguistic and Social Features of Common Sense Can Throw Light on More Prestigious Bodies of Knowledge, Science For Example," *Social Studies of Science* 31 (2001): 731–69.

[7] Studies of this abound, but see Simon Schaffer, "Godly Men and Mechanical Philosophers: Souls and Spirits in Restoration Natural Philosophy," *Science in Context* 1 (1987): 55–85; Dennis Todd, *Imagining Monsters: Miscreations of the Self in Eighteenth Century England* (Chicago and London: U of Chicago P, 1995); Lorraine Daston and Katharine Park, *Wonders and the Order of Nature, 1150–1750* (New York: Zone, 1998); and Noga Arikha, *Passions and Tempers: A History of the Humours* (New York: Ecco/HarperCollins, 2007).

[8] Geertz (1983/1993): 75.

humours.[9] Humours are the very embodiment, so-to-speak, of "just life in a nutshell": tears, saliva, snot, excretions, sweat, bile, blood, lymph—in sum, all the more or less liquid stuff that the body produces is a sort of humour, which in Greek simply means fluid.

But beyond that immediate knowledge, there is a historical theory of the four humours. It began to be developed in fifth-century BC Ionia as an expert theory by "Hippocrates"—that is, by the Hippocratics, medical rationalists who followed Hippocrates, eventually mythologized as the founder of medicine,[10] in defining medical practice apart from that of the priesthood and whose texts would be compiled by the third century BC in Alexandria.[11] (The fourfold division was probably based on Empedocles's division of the world and organism into pairs of opposites.) The Pergamon-born, Roman physician Galen would further refine what he believed were Hippocrates's own conceits in the second century AD, revising and synthesizing them along with Plato, Aristotle, and the anatomically insightful Alexandrian anatomists of the third century BC (mainly Herophilus and Erasistratus). Galen was the one who would most explicitly define all functions and temperaments in terms of humoral constructions extrapolated from the ordinary fluids we see with the naked eye, imagining them as phlegm, choler or yellow bile, melancholy or black bile, and the humour blood.[12]

And since then, for nearly 2500 years, the theory bridged the gap between the visible body and its invisible byways, offering a coherent account of the relation that visible function bore to invisible form. It guided medical practice and became the standard mode of explanation of all things medical and psychological, of temperaments, personality and body types, emotions, and shifts in mood (note that mood is *humeur* in French, *umore* in Italian, and humour in Victorian English). It accounted for our psychosomatic nature, for the profound interaction between states of mind and corporeal states, between bodily and mental health. The humours that governed the microcosm of the body were also imagined to be in correspondence with the macrocosm—with the four elements and the corresponding four qualities (hot, cold, dry, moist), with the four seasons, the time of life, the time of day, and even the four cardinal points, eventually with planets and astrological signs, as we shall also see further on.

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[9] Arikha (2007).

[10] Hippocrates probably existed; however, see Jacques Jouanna, *Hippocrates*, trans. M. B. DeBevoise (Baltimore, MD and London: Johns Hopkins UP, 1999).

[11] See Hippocrates, *Nature of Man*, trans. W. H. S. Jones (Cambridge, MA and London: Loeb, 1931), written by Polybus, disciple and son-in-law of Hippocrates.

[12] Galen, *On the Doctrines of Hippocrates and Plato*, ed. and trans. Phillip de Lacy (Berlin, Germany: Akademie-Verlag, 1978); and *De Temperamentis, et de inaequali intemperie, libri tres* [*Galen on Temperaments*], trans. Thomas Linacre (Oxford, 1521 and Cambridge, 1881).

That theory—as well as the very use of the word humour to denote fluid—might seem esoteric today. But then our perception of what is esoteric and what exoteric is revealing, insofar as it is dependent on cultural context, on history as well as geography. What might seem obvious or established here and now might seem very fanciful or "alternative" elsewhere. The theory of humours is a case of a theory that seems esoteric in virtue of its belonging to the past. It is no longer taken seriously in mainstream culture—that is, whatever accounts it once gave have been firmly and definitively replaced by better, more usable ones. After all, the theories that survive are those that are usable—even today, pharmaceutical companies tend to give money to what they see as potentially usable and thus economically profitable enterprises.[13]

But humours were useful for a long time, in part because no better theory came along until quite recently. When William Harvey demonstrated the mechanism of blood circulation, in the 1620s,[14] humoral theory and its related practices should have disappeared, because the anatomy and physiology on which it relied was incompatible with this new picture of the organism. In fact, people continued to refer to spirits and humours, and doctors continued to prescribe phlebotomies, enemas, and cataplasms, for centuries more—even after it was established in the mid-1800s, most notably by Louis Pasteur,[15] that germs were the causes of disease. Improvements in hygiene helped fight infectious diseases; medicine and surgery progressed tremendously over the second half of the 19th century. But guides advocating treatments of humoral origin were still appearing in the early 1900s. And today still, or again, as one might argue, alternative medicines based on the notion of balance are popular. If we think of humoral theory as esoteric or curious, then, it is because we have forgotten the story that has in fact sustained its survival in various forms, under different names, notwithstanding the scientific discoveries that dismantled the foundations of the original theory.

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[13] See for example, David B. Resnik, "Financial Interests and Research Bias," *Perspectives on Science* 8 (Fall 2000): 255–85; Joel R. Lexchin, "Implications of Pharmaceutical Industry Funding on Clinical Research," *The Annals of Pharmacotherapy* 39, no. 1 (2004): 194–97.

[14] William Harvey, *Exercitatio anatomica de motu cordis et sanguinis in animalibus* (Frankfurt, 1628), ed. and trans. Kenneth J. Franklin as *Movement of the Heart and Blood in Animals: An Anatomical Essay* (Oxford, UK: Blackwell Scientific Publications, 1957); and see Robert G. Frank, *Harvey and the Oxford Physiologists: A Study of Scientific Ideas* (Berkeley and Los Angeles: U of California P, 1980).

[15] See Anne Hardy, *The Epidemic Streets: Infectious Disease and the Rise of Preventive Medicine, 1856–1900* (Oxford, UK: Clarendon Press, 1993). Key texts by Louis Pasteur include: "Mémoire sur la fermentation appelée lactique," *Comptes rendus des séances de l'Academie des Sciences* 45 (1857): 913–16; "Etude sur la maladie charbonneuse (avec la collaboration de M. Joubert)," *Comptes Rendus de l'Académie des Sciences* 84 (April 30, 1877): 900–06; "Discussion. La théorie des germes et ses applications à la chirurgie," *Bulletin de l'Académie Nationale de Médecine*, 2nd series., 7 (19 March 1878): 283–84 and (26 March 1878): 318–19.

This story is very much a textual one that involves figures familiar from the history of thought and philosophy, and in that sense it does not partake of folk knowledge. It was on the basis of expert texts that people were bled and given violent purges to get rid of corrupt humours—often dangerously and even lethally. Doctors practiced their cures often against the odds and notwithstanding questionable results. But the notion of a balance between paired opposites also gave rise to commonsense prescriptions and a variety of decent treatments. A humoralist would tell one generally to counteract an excess with its opposite, hot with cold and dry with moist; to use mustard cataplasms and inhale soothing vapors if one had a cold, to eat warming foods in the winter and cooling foods in the summer. Inversely, a choleric person would suffer from summer heat, because yellow bile was a warm humour, and the winter induced excessive sleep in the phlegmatic, because phlegm was a cold humour. From its Hippocratic origins on, humoral theory yielded precise guidelines for everyday life, advice about where to live, how to sleep, how much to exercise or have sex, when to have a phlebotomy, when to go for a walk or bathe, and of course, what and how much to eat and drink. It cohered, in short, with commonsense knowledge.[16]

Does humoral theory justify these commonsense credences and easy guidelines, or is it at their origin? Probably both. Humoral theory was at once simple and sophisticated, even rarefied. It included a particular view of the soul, derived from a combination of Plato and Aristotle, according to which liver, heart, and brain were considered the respective seats of its appetitive, sensitive, and rational aspects.[17] Humours were first produced out of the heat of digestive processes in the stomach and then expedited to the liver, traveling from there to the heart, along with the so-called "natural" spirits, which were then refined into so-called "vital" spirits and sent from the heart to the brain, where the spirits became "animal." This picture of the psychosomatic organism accounted well for the interconnection of passions and reason. Christian, Jewish, and Muslim scholastics amended it frequently but adopted most of its principles, along with the teleological structure of Galenic and Aristotelian thought, according to which form derived from function—an order of things that suited the three monotheisms in the Middle Ages. The fortune of Galenism in the Arabic-speaking world is well known, and it is from those lands that this multilayered, complex package was bequeathed

[16] Such advice was contained in the *Regimen sanitatis salernitatum*, which circulated throughout Europe from the 12th or 13th century on, first in Latin (from the Arabic) and then in a variety of vernacular languages. See Arikha (2007): 100–04.

[17] See ibid: 37–41. A useful account of the vagaries of classical psychology is in Charles Schmitt, Quentin Skinner, Eckhard Kessler, and Jill Kraye, eds., *The Cambridge History of Renaissance Philosophy* (Cambridge and New York: Cambridge UP, 1988) 453–533.

back to Europe along with the movements of ideas, letters, and people that subsequently became known as the Renaissance.[18]

The highly problematic nature of the anatomical assumptions on which humoral theory was based had already begun transpiring in the late Middle Ages. Dissections on humans had resumed in the 14th century for the first time since Alexandrians had been allowed to resort to them in the third century BC. Seeing for oneself, rather than relying on textbooks derived from classical sources, became increasingly desirable. But it took a while for the study of the open corpse to radically change the maps thanks to which one was exploring it, and the theory lived on beyond the revolutions in anatomy of which Andreas Vesalius, in the mid-16th century, was the most notable exponent.[19] From cutting into skin to understanding the network of vessels it conceals and envelopes, there are many steps. Physicians realized that Galenic texts had been corrupted as they had traveled; so textual sources could be revised—and so, the human corpse could be used as evidence and help along the revision. Vesalius observed, for instance, that the liver was not connected to the heart via the vena cava, as had been believed—which meant that there could be no humoral flow between liver and heart.[20] Anti-humoralists were exerting their influence, too—Paracelsus, Van Helmont, and their followers, practitioners of alchemy.[21] But a potentially lethal blow to humours came from William Harvey, who, conducting precise experiments, demonstrated inductively that the blood circulated via the lungs, thanks to the heart's pumping.

Harvey did not reject the Aristotelianism he had grown up with. He used scholastic language, writing that the blood was "the common instrument of all operations, and also the primary efficient cause of the pulse."[22] Aristotle himself had performed numerous dissections, and Harvey cited the peripatetic dictum that "Faith is to be given to reason if the things which are being demonstrated agree with those which are perceived by sense: when they have become adequately known, then sense should be trusted more than reason."[23] Harvey was also aware that the absence for over a millennium of comparative dissections had meant that

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[18] See Arikha (2007): ch. 2, pp. 45–70. Manfred Ullmann, *Islamic Medicine* (Edinburgh, UK: Edinburgh UP, 1978) remains an authoritative study.

[19] Andreas Vesalius, *De fabrica corporis humani* (Basel, 1543). See also Arikha (2007): 139–50.

[20] Vesalius (1543): bk. III; see also the Introduction, 2v.

[21] See, *inter alia*, William Newman, *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago and London: U of Chicago P, 2004); Walter Pagel, *Joan Baptista Van Helmont: Reformer of Science and Medicine* (Cambridge: Cambridge UP, 1982).

[22] Harvey (1628): see *Movement of the Heart and Blood in Animals: An Anatomical Essay*, in Kenneth J. Franklin, trans., *The Circulation of the Blood and Other Writings* (London: Dent, 1963) 175.

[23] William Harvey, *Exercitationes duae anatomicae de circulatione sanguinis* (Cambridge, Rotterdam, 1649; English ed., 1653), in Kenneth J. Franklin, trans., *The Circulation of the Blood: Two Anatomical Essays* (Oxford: Blackwell Scientific., 1958): "A Second Essay to Jean Riolan. In which many objections to the circuit of the blood are refuted," p. 55.

available conclusions about the body's structure had been stuck in the form of a "universal syllogism on the basis of a particular proposition."[24] And he was able to come to new conclusions by willfully bypassing this universal syllogism. But this does make him a revolutionary—indeed, he was a dedicated Royalist in revolutionary times. Nor was he particularly keen on the anti-Aristotelian Francis Bacon, who had been the first to call for the creation of a community of like-minded gentlemen engaged in the pursuit of experiments for the sake of understanding the mechanisms of nature and improving the human lot, a community which eventually would be consecrated as the Royal Society in 1660.[25] (Harvey's heirs and students were to be its first members, all actors of what was subsequently called the Scientific Revolution.)

Changes took place, then, on the basis of a cultural continuum; early modern natural philosophy was concocted out of past models. To trace in this way the thread linking Galen and Harvey might look like an investigation into a highly expert field, known to just a few, partaking of intellectual history rather than of folk knowledge or common sense. But again, humoral theory was so successful for so long because it made sense in everyday life. The new mechanistic organism was no longer tied to the macrocosm, but it absorbed Galenic hydraulics. The humoral chart, based as it was on the notion of balance, provided recipes for controlling or curbing physical and emotional distress and for the treatment of ailments not otherwise readable. Humoral principles were passed on along with dietary and pharmacological traditions. Manuals and herbals, most often based on Theophrastus, Pliny, Dioscorides and their Byzantine, Arabic, or Persian heirs, transmitted at once expert and commonsensical knowledge, seamlessly melded in with magical practices and superstitious beliefs. In the 12th-century *Thesaurus Pauperum* by Peter of Spain, for instance, one had it from such authorities that prune resin could dissolve a kidney stone or that cauterizing the neck was an effective remedy against headaches but also that a vulture's feather placed under a pregnant woman's feet accelerated the onset of labor.[26]

Popular beliefs thus lived on. Meanwhile, medical practice depended on the ascription of authority by doctors to established, canonical bodies of texts, and by patients to doctors. The humoral notion that illnesses should be literally purged out of the body makes some degree of common sense even now, but it was also an expert datum, taken for granted and transmitted by experts. Humoral theory demanded belief in the efficacy of its often violent and dangerous, but sometimes effective, methods. Its features, in fact, could easily be studied by anthropologists,

[24] Harvey (1628), in Franklin (1957): 44.

[25] See Francis Bacon, *Novum organum* (1620), especially pt. II.

[26] Pietro Ispano, *Il tesoro dei poveri* (Thesaurus Pauperum): *Ricettario medico del XIII secolo*, ed. Luca Pesante (S. Sepolcro: Aboca Museum Edizioni, 2007) 49, 137, 175. Peter of Spain became Pope John XXI in 1276.

if anthropology relies on distance from its object, but also by philosophers, if philosophy consists in the dissection of what is right under our noses.

What have remained of humoral theory are not only some of the empirically validated findings that fed its usable features—its expert, sometimes occult pharmacopoeia and its commonsense health guidelines. More subtly perhaps, there also remain those features that fulfill a psychological need to believe in an authoritative truth, to categorize the world and ourselves—just as astrology does. And indeed, with each humoral or personality type, once corresponded four constellations and a planet that named the type—such as the melancholic Saturnine.

Melancholy remains a recognizable concept;[27] so do the signs of the zodiac—and some still call melancholics Saturnine. Like humoral theory and the pharmacopoeia, herbal and otherwise, that humoral doctors prescribed, astrology was once a mainstream, complex, and expert discipline. It relied on sophisticated data and calculations, and was the product of the highest speculation in the ancient world, from China and Babylonia to Egypt, Greece, and India, to Persia and the medieval Arab world. This rich heritage was studied and practiced in the West by many of the great Renaissance and early modern scholars, such as the 16th-century physician and polymath Girolamo Cardano, or Giambattista della Porta, whose popular *Magia naturalis*, first published in 1558, combined it with alchemy and magic, or Nicholas Culpeper, whose *The English Physician*, subtitled *Or an Astro-Physical Discourse of the Vulgar Herbs of This Nation*, was first published in 1652, just 25 years after Harvey's *Movement of the Heart and Blood in Animals*, and is still in print. And astrology was resorted to by more than one potentate, from bankers to kings and popes.

This body of established expertise is now no more a part of modern mainstream scientific knowledge than is the humoral theory of which it was an aspect. But while the data and calculations can no longer pass muster with astronomers, just as humoral theory can no longer pass muster with biologists, astrology has survived as a multi-million dollar industry—and not only as a banal subject of idle conversation. Our culture still contains the commonsense remants of a system invented by trained experts who observed the heavens and lived in worlds chronologically and culturally distant from ours. Today's astrology experts, enamored of the esoteric or occult, practice an ancient discipline unsupported by any evidence other than its ability, common to all predictive arts, to describe as facts possibilities that lie in a plausible future or present. Perhaps the system still seems powerful because the very possibility of attributing meaning to imaginary connections between unrelated astral objects delivers the meaning one is looking for: It is only because astrological relations are constructs we create that they can be meaningfully correlated with life on earth.

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[27] On melancholy, see Arikha (2007): 115–20, 155–70, and 315 n. 10 for bibliography.

One should not dismiss as insignificant the common need to order in humanly intelligible terms what is in fact not so. There is much to be learned from the ease with which we believe in constructed orders unaware of how and why we believe in them. For the resiliance of "folk," or non-scientific models in the collective psyche can be explained in the same terms as those with which we use our expert, scientific models. The need for order can give rise to the belief that the order is identical with the reality thus ordered, regardless of the order one is adhering to.

III

Perhaps, then, there is no epistemology without anthropology: The process of attributing value to an explanatory or descriptive system is tied into psychological processes. The preceding historicist account only holds up if we remember that deference to authority regarding facts is one psychological feature shared by both "high" and "low" modes of knowledge about the world. We accept fads about supplements and foods or diets on the authority of the press; we accept to take pills whose ingredients and precise functions are barely understood by the prescribing doctor on that doctor's authority. Others accept homeopathy on the authority of trained homeopaths but mistrust allopathically trained doctors and vice versa. We do not so much have a coherent relation to bodies of knowledge as a pragmatic one, inflected by the need to believe in a system, a cluster of related data, or a piece of information, fictitious or not.

Our bodily self-knowledge, too, is relatively poor, and it is easy to believe in any authoritatively packaged account of it. How many of us know, say, the precise difference between veins and arteries, or how to take our own pulse, or how to interpret its beats? Herophilus, one of the third-century-BC Alexandrians, was an expert anatomist who understood that the pulse was related to the heart. Most of us would take this for granted today, because it is an established datum, just as it is established since Harvey that the blood circulates thanks to the pumping action of the heart. But even if one is aware of the further fact that the pulse corresponds to blood pressure, very few of us would be able to explain accurately how all this works; we could believe anything, including the Galenic notion that heart and liver are vascularly connected. And introspection is unlikely to be the source of awareness. To know something about the pulse is to participate at once of common sense and of expert knowledge.

So we must rely on knowledge or beliefs gathered by others to be aware of what the pulse is, or to know anything else of our embodiment. Again, early modern, especially 17th-century natural philosophers were skeptics who argued in-depth about the limits within which our natural faculties could yield dependable knowledge of the world. The senses could fool us, but there had to be methods for ensuring we delivered accurate testimony on the basis of the data they alone could

gather. This remains true: Increasingly sophisticated technology enables the investigation of body and mind in ways that were unimaginable then. But technology is no excuse to abandon early modern skepticism and to forget that novel expertise about the brain is not expertise about the mind. Back then, it was a commonplace that the mind could not know itself. The only experts of the higher, rational soul were theologians and priests: To study it was not the stuff of natural philosophy but of metaphysics. This did not stop someone like the physician Thomas Willis, one of Harvey's heirs and founders of the Royal Society, to coin the word "neurologie"—the doctrine of the nerves—and to dissect the brains of dead patients in order to revise brain anatomy.[28] He too devoutly claimed to be investigating merely the corporeal, not the rational soul, though the history of modern neurology, arguably—it has been argued—begins here. Even then, humours flowed on within the body. Willis bled, purged, and cauterized his live patients like everyone else, and he explained sensation, perception, emotion, and cognition in terms of animal spirits flowing through the nerves, which he and his contemporaries still believed to be hollow.

That this was wrong would not matter as long as one could follow the gist of the account. The data of scientific investigation are not always so different from those passed on within folk knowledge, which may derive from empirical observation and thus can be more or less true to experience. They are approximative enough that they are usable. So one may explain a macroscopic physical activity by reference to animal spirits or to neurotransmitters—but regardless of the explanation, the relation between the macroscopic and microscopic realms is not entirely resolved. So the need to eat warming foods in the winter does not gain in clarity from further justification: The humoral story once absorbed and redescribed this "just life in a nutshell" need in commonsense terms, and a more recently forged microscopic story would not be necessary for one to go ahead and prepare a spicy stew. Full knowledge of the microscopic story is far too complex for any scientist to detain, and in any case it would not change one's perception of craving for the stew. Instead, it is the deference to the authoritative status of the available account, whether humoral or more recent, that allows for this account to make—common—sense.[29] We need our theories. But no person ever knows the whole scientific story; the best scientists are aware of that.

This is why it is useful to remember, with historians and anthropologists, that the notion of what carries scientific authority is not fixed; models change. Of course the

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[28] Thomas Willis, *Cerebri anatome* (1664). See Robert L. Martensen, *The Brain Takes Shape: An Early History* (Oxford, UK: Oxford UP, 2004).

[29] See Gloria Origgi, "What Does It Mean to Trust in Epistemic Authority?" *The Concept of Authority: A Multidisciplinary Approach—From Epistemology to Social Sciences*, ed. Pasquale Pasquino and Pamela Harris, (Rome: Edizioni Fondazione Olivetti, 2005) 89–115.

truthfulness of a scientific proposition is not bound by its context: The existence of a grounded difference between truth and falsity is incontestable.[30] There is a reality out there that science can analyze and act upon. But cultural bias always exists. The cultural and historical context in which a scientific theory can make sense to us has an import on the theory's content. Phrenology, for instance, like its humoral cognate physiognomy, certainly was quackery. But, especially given how seriously one takes brain scanning today, one could do well to remember that it too was taken seriously at one point. Folk and high knowledge share the same ontological plane, at a remove from the reality they describe, and each can partake of common sense, according to the cultural context and historical moment.

All this might surprise a little bit the reader of the *New York Times* science pages. The way in which scientific news is divulged seems often to perpetuate an explanatory framework favorable to the illusion that a theory does encapsulate the whole reality of what it explains. For instance, some forms of depression may have something to do with genes. But that does not mean that one can simply isolate and eradicate the "gene for depression," as one is sometimes told in the mainstream press. Such a gene would be as metaphorical as animal spirits—just as "depression" seems to cover as many states as did melancholy, its humoral ancestor. Saturnines still exist, and they do not systematically need medicated pills.[31] It often occurs, though, that blown-up news of a gene function or the overselling of a mood-changing pill feeds into the need for magical credences, the same need that led Peter of Spain to transmit the vulture feather trick, among many others. Of course, magic is an *a priori* set of beliefs not amenable to empirical analysis, unlike both common sense and modern science, as Marcel Mauss noted in his *General Theory of Magic*.[32] But at the user end—at the ordinary knowledge end—authority and exactitude are not necessarily functions of each other. Genes, results, statistical demonstrations—hard-core scientific and social science data—are hard to interpret correctly, but it is tempting and easy to use them as so many commonsense theories about body and world, in the name of experts and in the guise of expertise. Perhaps it would be wise instead to use common sense as a source of expertise—not in its name, but rather in the name of "just life in a nutshell."

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[30] For a convincing philosophical treatment of this matter, see Thomas Nagel, *The Last Word* (New York: Oxford UP, 1997).

[31] See Gary Greenberg, "Manufacturing Depression: A Journey into the Economy of Melancholy," *Harper's* May (2007): 35–46.

[32] Marcel Mauss, *Esquisse d'une théorie générale de la magie* (Paris: PUF, 1950) 85. Gloria Origgi, "Is Trust an Epistemological Notion?" *Episteme* 1, no. 1 (2004): 61–72.